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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,652	05/01/2006	Alex Rapoport		3203

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EXAMINER
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LIPITZ, JEFFREY BRIAN

ART UNIT	PAPER NUMBER
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3769

MAIL DATE	DELIVERY MODE
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08/04/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,652	<b>Applicant(s)</b> RAPOPORT, ALEX	
	<b>Examiner</b> JEFFREY B. LIPITZ	<b>Art Unit</b> 3769	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/19/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/23/2008</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 5, 6, 8, 10, 15, 19 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 5, 10, 15, 19 and 24, it is unclear how the predetermined fluence and the input fluence are related.

Regarding claims 5, 6, 8, and 10, these recitations are intended uses of the invention. It is unclear how any of them necessarily modify the structure of the invention; and thus it is unclear how they modify the scope of the invention.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Altshuler (20060058712) in view of Koziol (5425727) and Nagase et al. (20020022829), hereinafter Nagase.

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Regarding claims 1-3, 9, 12-15, 17 and 23, Altshuler teaches a radiation source that outputs a beam (11) that becomes collimated, and reflects off of beam converter or mirror (62; Figures 32A-32C), or mirrors (62 and 67; Figures 34A and 34B). These mirrors can rotate over an angle (f); however the light's target is NOT along this axis. However, Altshuler also teaches the concept of splitting beam (11) with angle beam splitter (38; Figures 28-31), and then recombining the split beams into focuses (39 and 40).

Attention is directed to Koziol who teaches a light source (30; Figure 2) that emits light that is divided up when it reflects off of reflectors (12a-h), which are rotatable about hub (18; Column 5, Lines 45-57). This divided up light is then reflected off of peripheral reflectors (14a-h), which directs the light to a depth within the eye (Column 5, Lines 62-66). The light beams are clearly illustrated as converging towards a volume (e.g. the stroma). Unlike Altshuler, Koziol illustrates that the symmetry and rotation axes are collinear. Koziol's radiation *necessarily* has a maximum energy fluence greater than the fluence along the symmetry axis, since the divided beams impinge the surface at a displaced distance and at an angle relative to the axis (Figure 2). Altshuler and Koziol's radiation is has a necessarily has a lower radiation at the tissue surface than the predetermined energy fluence, since the radiation with the predetermined fluence is divided before it reaches the surface, and only converges once inside the tissue. Finally, Altshuler teaches the formation of 3-dimensional optical islets by the focusing method (Paragraph [0332]; Figure 66). In this experiment, Altshuler plots irradiance vs.

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depth, with a target focusing depth of 0.5 mm. The irradiance at the surface, as plotted, is 4-25 times less than the irradiance at the target depth.

Although Altshuler intends to cause damage deep within the skin without causing epidermal damage (Paragraph [0195], [0291] and [0326]), he does not explicitly suggest converging two beams at the treatment point to do so. Attention is further directed to Nagase who teaches a thermal treatment device (Abstract). Nagase teaches concentrating reflected laser beams at a target location within the tissue to avoid substantial heating of the intermittent tissue and of the surface (Paragraphs [0083-0084], [0089-0091]; Figures 4 and 6).

It would have been obvious to use the beam converter of Koziol with the method and device of Altshuler, because it would have enabled the input beam to be divided into more sub-beams, which would have further reduced the fluence at the surface. Furthermore, it would have been advantageous to use a device wherein the symmetrical axis and the rotational axis are collinear with the device of Altshuler, because it would have enables the beams to recombine over a greater volume within the tissue, which would have again reduce the total energy at the surface. It also would have been obvious to use the converter of Koziol with the device/method of Altshuler, because one of Altshuler's goals is to provide methods and devices that cause damage deep within the skin without causing epidermal damage (Paragraph [0195], [0291] and [0326]). Finally, it would have been obvious to use the teachings of Nagase to justify using the device of Koziol with the invention of Altshuler, because Altshuler ad Nagase are concerned with overheating non-target tissue. Furthermore, the device of Koziol

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provides an alternative device/method to converge light beams to one point within the tissue.

Regarding claims 4, 11, 18 and 25, Altshuler teaches using radiation 290-10,000 nm (Paragraphs [0024]), which covers Applicant's claimed range. Furthermore, Altshuler plots the penetration depths of light at wavelengths between 800-1700 nm (Figure 65), which substantially overlaps with Applicant's range.

Regarding claims 5, 19 and 24, as best understood by Examiner, the directed radiation is the radiation at the point at which the predetermined input beam is divided. Therefore, the directed beams will all necessarily have a lower energy than then predetermined beam.

Regarding claims 6 and 20, Altshuler teaches that irradiance decreases with depth into the tissue (Figures 64-68), which necessarily means that the radiation at the target volume is less than the predetermined energy.

Regarding claims 7 and 21, Altshuler teaches providing collimated light to the optics and to the tissue (Paragraphs [0330], [0348] and [0376]).

Regarding claims 8 and 22, Altshuler teaches using different parameters and focuses to obtain different focal depths within the tissue (Figures 65-68; Paragraph [0152], [0154] and [0383-0384]).

Regarding claim 10, Altshuler and Koziol do not use optics that modify the energy of the redirected radiation. Therefore, the redirected beams necessarily have less energy compared to the predetermined fluence.

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Regarding claim 16, Koziol teaches that the central reflectors (12a-h) are rotated during irradiation such that the incident radiation is radially spread out (Column 7, Lines 60-69). It would have been obvious to also rotate during the method of Altshuler, because Altshuler also uses a scanner for forming a pattern in tissue (Paragraphs [0258]). It would particularly advantageous to rotate while performing the method because it would inherently enable a larger volume of tissue to be irradiated in a smaller amount of time.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bragagna (20080208104) teaches a laser microporator. Dagenais (4518232) teaches a method and apparatus for optical beam shaping. Dover (20060020260) teaches a method and apparatus for treating tissue. Inagaki (4315130) teaches a method of treating an object with a laser beam.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY B. LIPITZ whose telephone number is (571)270-5612. The examiner can normally be reached on Monday to Thursday, 10 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry M. Johnson III can be reached on (571)272-4768. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JEFFREY B LIPITZ/  
Examiner, Art Unit 3769

/Henry M. Johnson, III/  
Supervisory Patent Examiner, Art  
Unit 3769